



Serial No. 09/699,537

IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently Amended) A method of forming a wire bond style/flip chip attach assembly electrically connecting a semiconductor die having a bond pad pattern to a first substrate having a connector pattern arrangement when said semiconductor die is attached to second adapter substrate having an upper surface and having a second surface having a connector pattern thereon, comprising:

providing an inverted bare semiconductor die having a surface having a plurality of bond pads extending along a longitudinal axis of said semiconductor die on said surface in a first bond pad pattern different than the connector pattern arrangement of the first substrate;

providing a second adapter substrate having a die side surface, a second attachment surface, at least one via extending through the second adapter substrate from the die side surface to the second attachment surface, a plurality of circuits, and a plurality of bond pads located on the second attachment surface having a connector pattern connected to the plurality of circuits matching the connector pattern arrangement of the first substrate and a plurality of bond pads located in a first bond pad pattern connected to the plurality of circuits matching the first bond pad pattern of the bare semiconductor die;

applying an adhesive to a portion of the die side of the ~~first~~-second adapter substrate to attach the inverted bare semiconductor die thereto;

attaching a portion of the surface having a plurality of bond pads thereon of the inverted bare semiconductor die to a portion of the die side surface of said second substrate locating the bare semiconductor die above the second adapter substrate having the bond pads of the semiconductor die located over the via in the second adapter substrate;

connecting said plurality of bond pads of the inverted bare semiconductor die to said plurality of bond pads on the second attachment surface of said second adapter substrate using a plurality of wire bonds, said plurality of wire bonds extending through said at least one via extending from bond pads of the semiconductor die located on the die side surface of the second adapter substrate through said second adapter substrate to the second attachment surface of the second adapter substrate, the plurality of wire bonds connected

to the first bond pad pattern of the inverted semiconductor die and to the matching first bond pad pattern on the second attachment surface of the second adapter substrate; filling at least a portion of the via in the substrate with a sealant; and connecting said second adapter substrate to said first substrate having said second substrate located solely on one side of said first substrate, the connections between said first substrate and said adapter second substrate formed by a plurality of adapter board connectors extending between the matching connector pattern on the second attachment surface of the second adapter substrate to the connector arrangement of the first substrate.

2-4. (Canceled)

5. (Currently Amended) A method of forming a wire bond style/flip chip attach assembly electrically connecting a semiconductor die having a first bond pad pattern to a master board having a connector pattern arrangement, comprising:

providing an inverted bare semiconductor die having a plurality of bond pads located in at least two rows extending down the longitudinal axis of inverted the bare semiconductor die thereon, the at least two rows of bond pads having a first bond pad pattern;

providing a master board having a plurality of circuit traces on an upper surface thereof connected to a plurality of connectors in a second connector pattern arrangement located thereon different than the first bond pad pattern of the plurality of bond pads of the inverted bare semiconductor die;

providing an adapter board having a die side surface, a second attachment surface, a via extending through the adapter board from the die side surface to the second attachment surface, a plurality of circuits, a plurality of bond pads located on the second attachment surface of the adapter board having a plurality of bond pads connected to the plurality of circuits matching the first bond pad pattern of the plurality of bond pads of the inverted bare semiconductor die, and having a connector pattern connected to the plurality of circuits matching the connector pattern arrangement of the plurality of connectors of the master board;

providing a plurality of electrical connectors for connecting the connector pattern connected to the plurality of circuits matching the connector pattern arrangement of the plurality of connectors of the master board located on the second attachment surface of the adapter board to the plurality of connectors in a second connector pattern arrangement of the circuit traces of the master board;

attaching a portion of said inverted bare semiconductor die to a portion of the die side surface of the adapter board;

connecting said plurality of bond pads of said inverted bare semiconductor die to said plurality of bond pads of ~~said the adapter~~ board using a plurality of wire bonds, said plurality of wire bonds extending through the via extending through the adapter board having a portion thereof attached to the plurality of bond pads on the second attachment surface of the adapter board and having a portion thereof attached to the plurality of bond pads on the bare semiconductor die; and

connecting said adapter board and master board using said plurality of electrical connectors on said adapter board to said plurality of circuit traces on said master board using the plurality of electrical connectors.

6-25. (Canceled)

26. (Currently Amended) A method of forming a wire bond style/flip chip attach assembly attaching a semiconductor die having a first bond pad pattern to a first substrate having a connector pattern arrangement for attaching said first substrate to a second adapter substrate having an upper surface and having a second surface having a connector pattern thereon and having a plurality of circuit traces thereon, comprising:

providing an inverted bare semiconductor die having a surface having a plurality of bond pads located along a longitudinal axis of said die on said surface extending in a leads-over configuration on said surface, the plurality of bond pads having a first bond pad pattern different than the connector pattern arrangement of the first substrate;

providing a second adapter substrate having a die side surface, a second attachment surface, at least one via extending through the board from the die side surface to the second

attachment surface, a plurality of circuits, and a plurality of bond pads located on the second attachment surface of the second adapter substrate having a connector pattern thereon connected to the plurality of circuits matching the connector pattern arrangement of the first substrate and a plurality of bond pads connected to the plurality of circuits in a bond pad pattern matching the first bond pad pattern of the inverted bare semiconductor die;

applying an adhesive to a portion of the die side of the second adapter substrate to attach the inverted bare semiconductor die thereto;

attaching a portion of the surface having a plurality of bond pads thereon of the bare semiconductor die to a portion of the die side surface of said second substrate;

connecting said plurality of bond pads of the inverted bare semiconductor die to said plurality of bond pads of said second adapter substrate using a plurality of bond wires, said plurality of bond wires extending through said at least one via extending through said second adapter substrate, the plurality of bond wires connected to the first bond pad pattern of the plurality of bond pads of the inverted semiconductor die and to the matching first bond pad pattern of the plurality of bond pads on the second attachment surface of the second adapter substrate; and

attaching said first substrate to said second attachment surface of said second adapter substrate using a plurality of adapter board connectors extending from the second attachment surface of the second adapter substrate.

27-29. (Canceled)

30. (Currently Amended) A method of forming a wire bond style/flip chip attach assembly attaching a semiconductor die to a master board, comprising:
providing an inverted bare semiconductor die having a plurality of bond pads in at least two rows having a first bond pad arrangement located down the longitudinal axis of a surface of the inverted bare semiconductor die in a leads over chip configuration;
providing a master board having a plurality of circuit traces on an upper surface thereof connected to a plurality of connectors in a connector pattern arrangement located thereon,

said upper surface for the receipt of ~~an inverted bare semiconductor die~~ an adapter board therein;

providing an adapter board having a die side surface, a second attachment surface, at least one via extending through the adapter board from the die side surface to the second attachment surface, a plurality of circuits, a plurality of bond pads located on the second attachment surface of the adapter board having a plurality of bond pads connected to the plurality of circuits in a first bond pad pattern matching the first bond pad pattern of the inverted bare semiconductor die, and having a connector pattern thereon connected to the plurality of circuits matching the connector pattern arrangement of the master board;

providing a plurality of electrical connectors for connecting the connector pattern of the plurality of circuits located on the second attachment surface of the adapter board to the plurality of circuits of the master board;

attaching a portion of said inverted bare semiconductor die to a portion of the die side surface of the adapter board;

connecting said plurality of bond pads in a first bond pad arrangement of said bare semiconductor die to said plurality of bond pads in a matching first bond pad pattern of said adapter board using a plurality of bond wires extending through the via extending through the adapter board from the die side surface to the second attachment surface; and

connecting said adapter board and master board using said plurality of electrical connectors on said board to said at least one circuit trace on said master board using adapter board.

31-50. (Canceled)